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Research Article

Effect of Massage Therapy on Postoperative Nausea and Vomiting In Cancer Patients Receiving Chemotherapy: A Systematic Review

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ABSTRACT

Nausea and vomiting are the most common and most annoying physical side effects of chemotherapy and massage therapy is one method to reduce these effects.The objective of this study was to systematically study which has examined the effect of massage therapy on nausea and vomiting in cancer patients until 2014. In order to determine the effect of massage therapy techniques on nausea and vomiting in cancer patients undergoing chemotherapy, all articles on these subjects to 2014, such as Electronic Information CINAHL, British Nursing Index, EMBASE, AMED, Psych INFO, PubMed, SIGLE, Google scholar, Cancer Lit and site of Cochrane were searched, and finally according to inclusion criteria, 14 articles remained using relevant keywords based on clinical and quasi-experimental trials on nausea and vomiting. The results of all relevant studies were tested by two researchers and based on the checklists of evaluation studies of clinical and quasi-experimental trials and criteria for entry into the study, 6 studies were removed and 8 of them were remained. Only two did not show significant results regarding the effect of massage therapy on nausea and vomiting in cancer patients undergoing chemotherapy. 5 studies of 8 studies on women with breast cancer, a study of gynecological cancers and two studies were conducted on other types of cancers.

Keywords "Cancer;" "Nausea;" "Vomiting" And "Massage" Systematic Review.

INTRODUCTION

Cancer is the most frightening of all diseases including cardiovascular disease and causes 552,200 deaths annually (1). In Iran annually, more than 30,000 people lose their lives due to cancer. One of the main treatments for cancer is chemotherapy. Nausea and vomiting are the most common and most annoying physical side effects of chemotherapy(2, 3).(4) Uncontrollable nausea and vomiting can cause delays in the periodic program in chemotherapy and clearly reduce the quality the patient's life (5) . In a study, the incidence of nausea and vomiting after chemotherapy 44.2 percent was expressed (6).

It is estimated that more than 60% of patients who receive chemotherapy despite antiemetic drugs, suffer from the condition (7). Several randomized controlled trials studies on the effect of complementary therapies on the effects of chemotherapy ever done, preliminary evidence suggests that complementary therapies may be reduce symptoms of chemotherapy and improve the health of patients (8). However, because these studies were conducted with different designs and have shown different effects on different populations need to examine the effect of these studies.

New research suggests that patient to comply with medical conditions frequently seek medical interventions that are capability to perform outside of the clinic and is called complementary and alternative therapies (9). Massage therapy is one of complementary medicine which has highest rates of use in complementary therapies in cancer patients. Massage therapy reduces stress hormones like cortisol, epinephrine and norepinephrine and thus reduce anxiety and nausea and vomiting and creates relaxation and has been used as the most common way of complementary and alternative medicine for health promotion and prevention of diseases in acute and chronic conditions (5).

There is a set of empirical evidence and case study reports that support the use of massage therapy in cancer care (10).

Although several studies have been done in this area, yet has not given a definitive answer to the question of what effect massage on nausea and vomiting. In addition to the above, study the texts show there is no credible evidence of tumor spread through massage therapy, but health care providers should know although massage therapy is safe, but may have many

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disadvantages for some patients (11). Thus, a systematic review in this regard could be helpful. The objectives of this systematic review include: 1. the effect of massage therapy on postoperative nausea and vomiting in cancer patients undergoing chemotherapy treatment according to the type of massage therapy (Swedish massage, aromatherapy, reflexology, acupressure, and touch), 2. The effect of massage therapy on nausea and vomiting in cancer patients undergoing chemotherapy according to the type of gastrointestinal or non-gastrointestinal cancer 3. The effect of massage therapy on nausea and vomiting in cancer patients receiving chemotherapy, depending on the type of chemotherapy regimen, and is an answer to this question: does the nausea and vomiting massage reduces chemotherapy in cancer patients?

EVALUATION AND RESULTS

The present study is a systematic review in which all studies that were in regard to the effects of massage therapy on postoperative nausea and vomiting in patients undergoing cancer treatments until 2014 had been done, were searched by the key word "cancer," "nausea," "vomiting" and "massage treatment "strategy Cochrane the databases CINAHL, British Nursing Index, EMBASE,, PubMed, AMED, Psych INFO, SIGLE, Google scholar Cancer Lit Cochrane sites. Search basis was based on select clinical trials and quasi-experimental studies that their abstracts were published in English and Persian. Inclusion criteria were as follows: a quasi-experimental studies, before and after randomized controlled clinical trials with the issue of massage therapy in cancer patients undergoing chemotherapy and aged 18 to 65 years and measured nausea and vomiting by a reliable and valid measurements, patients were not using any complementary therapy other than standard treatment.

The studies which had following criteria were not evaluated:

1. those review these techniques as retrospective,

2. trials without control

Assessment of nausea and vomiting, according to the scales used in the authoritative references was used, so that the repetition rate of nausea and vomiting were measured. In the literature general, finally 14 studies were collected. Among the articles by topic, by two experienced researcher examined and by the evaluation checklist (RCTs) of controlled clinical trials CONSORT and with considering criteria for inclusion in the study, 8 articles were selected. Characteristics of studies included in Table 1. The ultimate goal of all this research in methods and dependent variables (nausea and vomiting) have a common points. Among the eight studies, a study on the effect of Swedish massage, a study of the impact of soft strokes, a study of the impact of effleurage strokes and 5 studies on the effect of acupressure which were a form of massage had examined nausea and vomiting in patients undergoing chemotherapy:

1. randomized controlled trial Billhult (2007) with the aim of detecting the effect of massage pressure in women with breast cancer were performed in the six areas of nausea, anxiety, depression, quality of life, stress and cellular immunity. Massage was performed from the behind to the trailing limb. Patients were randomly assigned to a massage therapy group (20 minutes in 5 innings of massage) or control group (a five 20- minute visit). Massage were followed by 5 nurses and practical nurses after theoretical and practical training. Massage was conducted as a soft blows for 20 minutes and by cooled vegetable oil. The control group were visited only by one of the hospital staff for 20 minutes. All conditions were the same except for the intervention. Measured outcomes included nausea and VAS on a scale of 100 mm, before and after intervention were measured every 5 sessions. Data were analyzed using t-tests and Bartlett's test. The results showed that the massage reduced vomiting of the intervention group compared with the control group (Mann-Whitney test, the average percent of recovery = 3.32 ± 73.2 percent). The study shows that massage can be beneficial in patients undergoing chemotherapy, but the need to confirm the results by studies with larger volumes are listed in this study (12).

2. Study of Post-White (2003) was conducted as randomized controlled cross over trial. Patients were randomly assigned to one of three groups: massage therapy, therapeutic touch group (energy healing) and received care. All those were received four 45-minute sessions of the set interventions per week and four times a week a standard / control care. After four weekly sessions, participants were replaced in the intervention groups. The mean time between weekly visits was from 6.9 to 7.2 days and the average time between cross periods 16.7 days (range, 3 to 56 days). Assessing the nausea and self- scoring the current vomiting was on a scale of zero to ten, just before and after each intervention session. After 4 weeks, evaluation of intervention effects at the beginning and end of session of each 4- week period, sessions 1, 4, 5, 8, was carried out. A Swedish massage protocol with the same blows using massage gel Biotone, containing oils of apricot, grape and sesame were performed. Participants began the massage in a prone position by effleurage strokes (gentle rhythmic crawling strokes) to top of back and then by petrissage (relaxation massage) and rub the waist, hips, buttocks continued distal organs. Massage and touch was avoided in the tumor and surgery location. Nausea was measured as self-reporting using BPI instrument. 33 patients due to request a different treatment or change in schedule, 30 patients due to changes in treatment protocols and 3 patients because of death were also excluded. After loss of the samples among 66 patients remaining 15, 21 and 30 patients were in the groups of massage,

touch and control, respectively. Nausea group had more loss than the study group in baseline. (Index score, z = -2.04, P = 0.041) analysis revealed that the conditions received had no effect on outcomes of interventions. The effects of the intervention on the outcome of nausea factor during 4 weeks were compared with control group and no significant differences between each intervention and control conditions in the index of nausea, nausea interference or use of antiemetic was observed. The samples despite non-significant expressed nausea reduction after massage (Table 1) (13).

3- Study of Roscoe (2003) was done with the aim of determining the effects of pressure massage and wrist bands Acustimulation for the relief of nausea and vomiting associated with chemotherapy. The patients randomly was assigned in the groups of double-sided pressure bands (Sea-Band) and separate acustimulation band (Reliefband) or the control condition of without bond. All patients received antiemetics on the day of treatment. inside of the wrist, about 2 inches elementary to Fold of skin at the distal wrist between longus Palmaris tendons and carpi radialis flexor muscles was wraped. The patients were instructed to wear the bands continuously for 5 days except when the water is likely to penetrate. Nausea and vomiting were measured by daily reports of the paitents. . Severity of nausea on a 7-point scale was evaluated. Initial analysis revealed that patients with compression bandages had significantly less nausea on the day of treatment (mean 2.6) compared with control group (mean 3). Patients with acustimulation band reported less nausea (p = 0.005). But statistically was not observed the difference in nausea and vomiting. This study support the bands as a complementary therapy along with antinausea medication to control nausea caused by chemotherapy. Patients of the pressure group had a lower nausea than the control group. This reduction was not seen in delayed nausea (14).

4-Pearl et al. (1999) assessed performance of Acustimulation with a follow-up in a controlled and randomized double-blind placebo crossover trial study. All patients participating in the study received a standard protocol to treat nausea and were bandaged for 7 days continuously. Patients in active bands cycles compared to placebo band cycle patients reported a significant reduction in nausea during the second to fourth days after the treatment. The incidence and severity of nausea and vomiting was similar for both groups. 18 patients were among the crossover of the study. The mean age of crossover patients and their antiemetic dose was comparable with the general population of the study (56.3 years against 58.6 and 22.7 versus 22.7 milligrams per square meter per week). Although nausea was significantly less in active cycles during second to fourth days, patients on average experienced less than one daily episodes of vomiting per cycle. The researchers concluded that pressure bands are an effective complement for standard antiemetic factors to control nausea caused by chemotherapy with Cisplatin in patients with gynecological cancer (15).

5. Study Grealish, Laurie (1999) is a quasi-experimental study of use of foot massage on patients with cancer. In a sample of 87 persons, foot massage was done and was measured with a visual analog scale. In fact, 103 people were enrolled in the study, but 7 patients withdrew due to disease severity. In addition, nine persons' data were incomplete, so that the sample declined to 87 subjects, 52 females and 35 males (aged 18 to 88 years, mean 58.2 years). Participants under study were massaged twice and in the third time were as the control of their group. Participants were randomly assigned to one of three groups of agent- control. Massage would take for 10 minutes (5 minutes for each leg). Massage was performed from toes to the leg. Self-reporting of nausea was measured using the VAS 100 mm. Analysis of variance (ANOVA) in three different modes, C (controlled before and after), M1 (first innings of massage before and after), and M2 (second innings of massage before and after) were conducted for each participant, with respect to gender as a factor for the research and the t-test was set with 86 degrees of freedom and statistical differences with a significance level of 0.05. Significant difference was found between the pre-test control session and nausea mean score declined from 18.4+ 22.5 mm to post- test score 17.4 + 20.5 mm (T = 0.942, P = 0.1745). In contrast, nausea mean score for massage session declined from 17.5 + 24.4 mm to 11.1 + 19.1 mm (t = 3.117, P = 0.0012), the mean difference is 6.4 mm. The result of data for session 2 was repeated with a before massage nausea score of 17.7 + 23.6 mm and after massage nausea score 12.8 + 18.6 mm (t = 3.178, P = 0.0011), with a mean difference of 4.9 mm (16).

6- The purpose of the study of Suh EE (2012) is to investigate the effect of P6 acupressure on nausea and vomiting induced by chemotherapy in patients with breast cancer. This study is a randomized clinical trial in cancer center at the University of Seoul, including 120 women undergoing chemotherapy after breast cancer. Participants were randomly divided into four groups: control group (who received placebo), the group that received only counseling, the group that only received P6 acupressure and the group that received P6 acupressure with nurse consultations. Gastrointestinal discomfort experiences was measured by Rhodes index of nausea, vomiting and retching including acute (1day) and delayed (days 2 to 5 days) observation of CINV chemotherapy-induced nausea and vomiting. Significant differences was seen in demographic and disease-related variables among the four groups. CINV levels were significantly different in the two groups from day 2 to day 5. CINV difference mainly was related to the difference between the two groups of control and P6 acupressure with nurse-provided counseling. Synergistic effects of P6 acupressure with nurse consultation is

seen effective at reducing CINV in patients with breast cancer (17).

7- The aim of the study Dibble (2007) was to compare differences in nausea and vomiting (CINV) among the three groups of women with acupressure, placebo acupressure and conventional care undergoing chemotherapy for breast cancer. This study was a randomized clinical trial was conducted in a cancer center affiliated with the University of Texas. 160 women with breast cancer undergoing chemotherapy with moderate nausea were studied. All patients were studied for 21 days and the symptoms of nausea and vomiting were recorded. The used tool was Rhodes Index of Nausea. Acupressure for nausea treatment involves the use of digital pressure to one of the points located on both forearms using the thumb for 6 minutes in the morning and 3 minutes during the day. Pressure in the placebo group was entered in the area except wrist. Overall m of the massage was over 4 hours in a month. Initially, total number of samples was 256 samples and 96 patients were excluded because of the severity of illness and lack of desire to continue the study. 54 patients in the usual care group and 53 patients in the placebo group and 53 patients in the acupressure group were included. The results showed that the reduction of nausea and vomiting was higher in P6 acupressure group, nausea in the acupressure group was reduced than the placebo group t = 3.13, P =0.002 odds ratio [OR = 1.3) or the usual care group t = 4.81, P <0.0001, OR = 1.4). Severity of nausea and delayed vomiting rates (2 to 11 days after chemotherapy) was reduced in the acupressure group than in the other two groups. Severity of nausea and vomiting in the placebo and usual care groups had not significantly different (18).

8- The aim of the study of Debille (2000) was to compare the severity of nausea and vomiting in breast cancer patients undergoing chemotherapy. For this reasons, two groups of patients were studied. First group of patients was those patients treated with acupressure and the second group of patients was those who only received usual care. For this, 17 women within 21 to 28 days were studied in a randomized clinical trial. Assessment tools for nausea and vomiting nausea Rhodes from the range 0 to 12 were used as the research tool and over the past 24 hours was measured from 0 to 10. Treatment group was trained to acupressure, and pressure points of patients' wrist and knee was where under pressure for 3 minutes. There was significant difference in the severity of nausea in the acupressure group than in the usual care there. F = 10.4, p = 0.005, but was observed no significant differences in the questionnaire of problems during chemotherapy in the two groups. F = 0.042, p = 0.08, Nausea average of the acupressure group and the control group in the last month were 8.2 and 3, respectively (19).

Table1 - Characteristics of the studies along with response rates and outcomes of massage therapy

Researchers	Type of study	The study population	Age	The sample size	Techniques of Massage Therapy	Type of Cancer	Type of chemotherapy regimens	The response rate and Massage Therapy outcome
Billhult (2007)	RCT	Women with breast cancer	-6933	39	soft strokes	Breast Cancer	epirubucin 75 mg / m2 (Pharmalink AB, Uppland V äsby, Sweden),fluorouracil 600mg / m2 (Mayne Pharma Plc, Warwickshire, United Kingdom),cyclophosphamide600 mg / m2(Baxter Medical AB, Kista, Sweden) every third week for a total of seven sessions.	Meaningful (P = 0.025)
Post-White (2003).	RCT	Patients referred to the chemotherapy clinic	-8327	230	Swedish massage protocol	Types of chemotherapy cancers	receiving chemotherapy with an identical repeating, cycle for 2 or more remaining cycle	reduction of nausea without significant
Roscoe (2003)	RCT	Patients referred to the chemotherapy clinic	Not listed	700	Acupressure Band & Acustimulation Bands	Types of chemotherapy cancers	Cisplatin or doxorubicin	Acupressure Band: Meaningful (P = 0.05) Acustimulation Bands: N / S

Pearl (1999).	RCT	Women with breast cancer treated with chemotherapy	51.8	39	effleurage strokes, to either their foot / lower leg or to their hand / lower arm	Breast Cancer	---	Meaningful P <0.05
Grealis, Laurie (1999).	RCT	Patients with genital cancer.	Mean 58	42	Reliefband: P6 acupuncture point	Cancers of the reproductive system	Unknown	significant reduction of nausea
Suh ee (2012),	RCT	Women with breast cancer in the first cycle of chemotherapy	Over 18 years	120	P6 acupressure	Breast Cancer	---	Meaningful P <0.05
Debille (2007).	RCT	Women with breast cancer	Over 18	160	Acupressure to P6 point	Breast Cancer	-----	N / S
Debille (2000).	RCT, pilot	Outpatient cancer clinic	Over 18 years	18	Acupressurep6 & ST36	Carcinoma and Adnokar Synom	Doxorubicin , Cyclophosphamide, methotrexate, fluorouracil	Meaningful P <0.01

DISCUSSION AND CONCLUSIONS

Nausea and vomiting are very common, yet debilitating side effects of cancer treatments. Results of this study corroborates the notion that according to the studies differences in the type of chemotherapy, type of interventions, measurement tools and the described results, a more studies are needed and it is needed to done more research in each group with different cancer and also with different chemotherapy treatments.

In response to the first objective of this study: should be noted that only two of the 8 studies did not show significant results regarding the effect of massage therapy on nausea and vomiting in patients with cancer undergoing chemotherapy. Perhaps this lack of difference is related to the use of different questionnaires and in some cases to the less sample size. If the authors had used the specific tools, effect and the results obtained from interventions was found to be an effective intervention. On the other hand, given that in 4 of 5 trials that had used pressure massage technique and the results were significant, perhaps it can be say that massage of acupressure possibly is effective on nausea and vomiting caused by chemotherapy, but as mentioned above, due to differences in the studies, it cannot be considered conclusively. As well, all of the 8 studies reported loss of the subjects, and this issue show results in more realistic and due to the fact that the interference in the case of cancer, various types of studies is limited and due to the combination of chemotherapy, further studies are requires.

In response to the second goal of the study, however, due to the limited number of studies have wrought on nausea and vomiting variables, cannot be conclusively stated this issue. However, since 5 of the 8 studies were conducted on women with breast cancer and a study on gynecological cancers and two studies on various types of cancers, perhaps it can be said that massage therapy influence nausea and vomiting caused by chemotherapy in cancer of the breasts, however, further studies are needed. So to confirm this reasoning, studies with larger sample size than previous research is needed. The limitations of the conducted studies is that none of the study on nausea and vomiting women patients at different stages of chemotherapy has not been studied and there is not the possibility of comparing the effectiveness of interventions at different stages of chemotherapy and further randomized controlled trials need to investigate this difference.

Regarding to the third objective: Since chemotherapy regimens in the studies were not the same, cannot be said that how massage therapy is effect on nausea and vomiting in the different regimens of chemotherapy.

However, there are no systematic investigation without limitation and this case study is also not excluded. Firstly because in some studies, although interventions have been mentioned as an effective tool in reducing nausea and vomiting, but the most difference are defined close to the level of the significant border (P = 0.05) . However, there is the possibility of more comparative studies on the interventions methods in the present studies that may be are not considered here.

However, although all expressed positive results but further studies are needed.

The present systematic review Despite confirmation of the effect of massage therapy methods on nausea and vomiting in 6 cases of the 8 papers could not have review and approve the positive effects of these methods on all types of cancers, all types of chemotherapy regimens and in all studies conducted in different countries and however, due to different conditions are not retractable and meta-analysis in all studies. Since this study was only conducted research and published in English and engage in many valid sites, it seems according to appropriate method of conducted trials, the noted interventions can be useful to improve the nausea and vomiting of breast cancer to a large extent, and since the fact that the implementation of these complementary methods are inexpensive and easy to learn and perform and harm to patients, it can be considered for complementary and nursing treatment in the cancer treatment centers.

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We have no financial interests related to the material in the manuscript.

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